

WHAT IS CLAIMED IS:

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5 1. A microphone system that executes an adaptive signal processing by using output signals from two microphones and outputs a speaker's voice signal with an improved SN ratio, the microphone system comprising two microphones having directional characteristics, wherein the microphones are positioned relatively close to one another, and the angles formed by the orientations of the microphones with respect to a speaker's vocalizing direction are different for each of the microphones.

2. A microphone system as claimed in Claim 1, wherein the microphones are mounted on the sun visor of a vehicle.

3. A microphone system as claimed in Claim 1, wherein the microphones are mounted on the ceiling above the driver's seat of a vehicle.

4. A microphone system as claimed in Claim 1, wherein the microphones are mounted on the ceiling above the front passenger seat of a vehicle.

5. A microphone system as claimed in Claim 2, wherein the orientation of one microphone is set to approximately coincide with the speaker's vocalizing direction.

6. A microphone system as claimed in Claim 2, wherein the orientation of one microphone faces toward the front passenger seat to form an angle of approximately 45° with respect to the speaker's vocalizing direction.

7. A microphone system as claimed in Claim 2, wherein the angle formed by the orientation of one microphone with respect to the speaker's vocalizing direction is set to approximately 0°, and the angle formed by the orientation of the other microphone with respect to the speaker's vocalizing direction is set to approximately 45°.

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5 8. A microphone system comprising two microphones having directional characteristics, an adaptive filter that simulates a noise signal outputted from one microphone by using a noise signal outputted from the other microphone, and a calculation means that calculates a difference between these two noise signals, wherein the two microphones are positioned substantially adjacently, and angles formed by the orientations of the microphones with respect to a speaker's vocalizing direction are different for each of the microphones.

10 9. A microphone system as claimed in Claim 8, wherein the microphones are mounted on the sun visor of a vehicle.

15 10. A microphone system as claimed in Claim 8, wherein the angle formed by the orientation of one microphone with respect to the speaker's vocalizing direction is set to approximately 0°, and the angle formed by the orientation of the other microphone with respect to the speaker's vocalizing direction is set to approximately 45°.

20 11. A microphone system as claimed in Claim 8, further comprising a filter processing means that updates filter coefficients of the adaptive filter.

25 12. A microphone system as claimed in Claim 11, wherein the filter processing means receives a voice signal outputted from a microphone and a difference signal outputted from the calculation means, and updates the filter coefficients of the adaptive filter so as to minimize a power of the difference signal by using the LMS algorithm.

13. A microphone system that executes an adaptive signal processing by using output signals from two microphones and outputs a speaker's voice signal with an improved SN ratio, wherein the microphones are positioned close to one another, and the SN ratio of the output signal from one microphone is raised, while the SN ratio of the output signal from the other microphone is lowered.

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14. A microphone system as claimed in Claim 13, wherein one microphone is disposed almost directly above the face of a speaker.

15. A microphone system as claimed in Claim 14, wherein the other microphone is spaced apart on the occipital side from the position of the one microphone.

16. A microphone system as claimed in Claim 14, wherein the other microphone is spaced apart on the occipital side by about 1 to 5 cm from the position of the one microphone.

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17. A microphone system comprising two microphones, an adaptive filter that simulates a noise signal outputted from one microphone by using a noise signal outputted from the other microphone, and a calculation means that calculates a difference between these two noise signals, wherein one microphone is disposed substantially directly above the face of a speaker.

18. A microphone system as claimed in Claim 17, wherein the other microphone is spaced apart on the occipital side from the position of the one microphone.

19. A microphone system as claimed in Claim 17, wherein the other microphone is spaced apart on the occipital side by about 1 to 5 cm from the position of the one microphone.

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20. A microphone system as claimed in Claim 17, wherein the microphone system determines filter coefficients of the adaptive filter by an adaptive signal processing during a period of non-recognition of a voice, does not update the filter coefficients during a period of recognition of a voice, and sets the filter coefficients determined during the non-recognition of a voice to the adaptive filter.

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